

1997 Chevrolet S10 Pickup

GENERATOR & REGULATOR 1997 ELECTRICAL General Motors Corp. - Generators & Regulators

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DESCRIPTION

The CS130 (Charging System) generators have a high amperage output. The 130 designation is the outside diameter of the stator laminations, measured in millimeters. CS series generators include a delta stator, rectifier bridge, and a rotor with slip rings and brushes. A built-in regulator incorporates fault detection circuitry. See **Fig. 1** . A conventional pulley and external fan are used to cool slip ring end frame, rectifier bridge and regulator.

Most CS series generators operate with 2 wire connections and a ground path through the mounting bracket. The first wire connection is the BAT (output) terminal. This terminal must be connected to the battery during operation. The second wire connection is through the charge indicator light or an external resistor to terminal "L" of the regulator. This connection provides initial excitation at start-up.

Three other regulator terminals, "P", "F/I" and "S", are provided for optional use. Terminal "P" is connected to the stator and may be connected to a tachometer. Terminal "F/I" provides an alternative method for turning on the generator without going through the charge indicator light or external resistor. Terminal "S" may be used to sense electrical system voltage at a remote point on the vehicle. If terminal "S" is not used, the regulator senses internal generator voltage.

Regulated voltage varies with temperature. System limits voltage by controlling rotor field current while field current is on. Regulator switches rotor field current on and off at a fixed frequency of 400 cycles per second to help control radio noise. By varying overall on/off time, correct average field current for proper system voltage control is obtained. At high speeds, with lower electrical loads, on-time may be 10 percent of off-time. At low speeds, with higher electrical loads, on-time may be 90 percent of off-time. See the **GENERATOR USAGE/AMP OUTPUT RATING** table.

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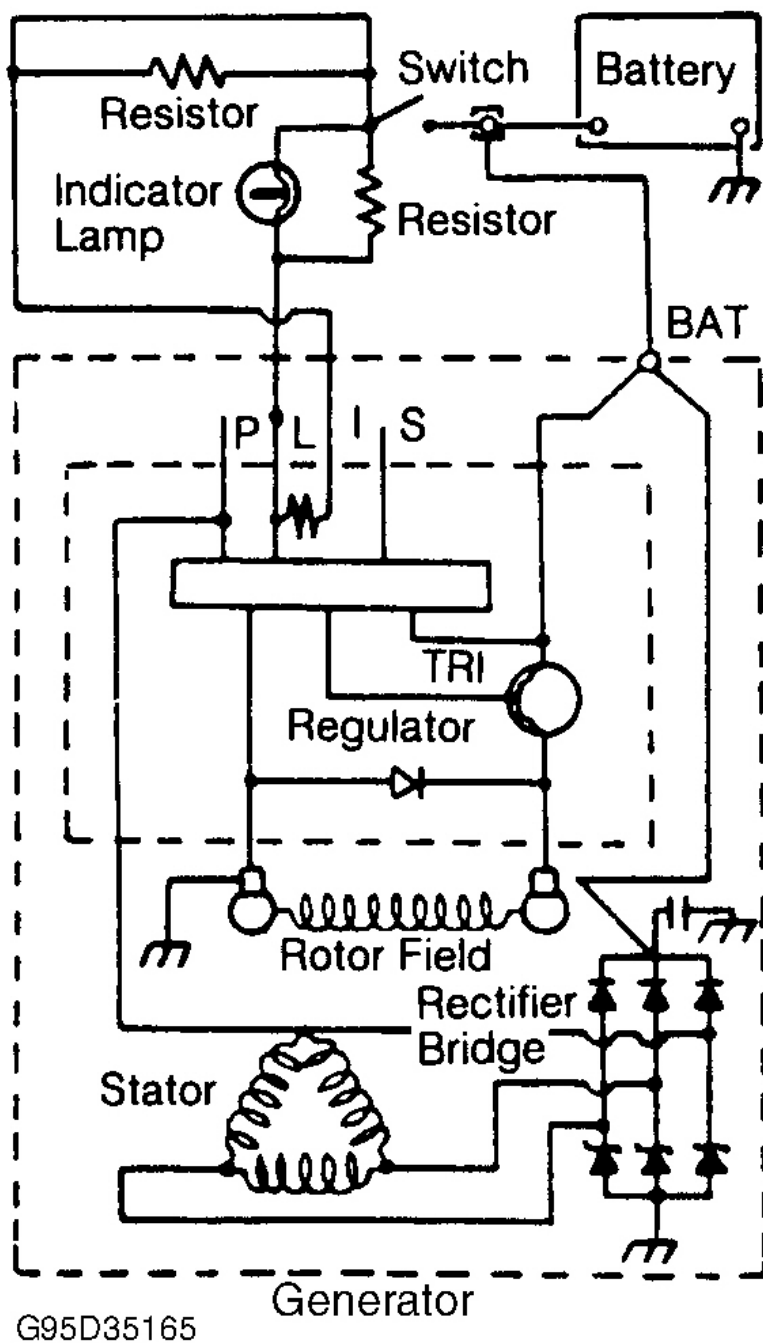


Fig. 1: Charging System Wiring Schematic CS130 Series
 Courtesy of GENERAL MOTORS CORP.

GENERATOR USAGE/AMP OUTPUT RATING

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Generator	RPO Code	Rated Output
CS130D	K60	100

ADJUSTMENTS

NOTE: No adjustment or maintenance is required on generator assembly. Regulator voltage is preset and no adjustment is possible. On all models drive belt tension is controlled by a belt tensioner.

TROUBLE SHOOTING

NOTE: For information not covered in this article, see the TROUBLE SHOOTING - BASIC PROCEDURES article in the GENERAL INFORMATION section.

ON-VEHICLE TESTING

NOTE: All generators are serviced by replacement only.

NOTE: Before making electrical checks, visually inspect all terminals for clean, tight connections. Check generator mounting bolts and drive belt tension. Ensure battery is in good condition prior to testing charging system.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in the GENERAL INFORMATION section before disconnecting battery.

CHARGE INDICATOR LIGHT

NOTE: Perform this test only if charge indicator light does not illuminate when ignition is turned on, or does not go out after engine is started.

CAUTION: DO NOT run engine with generator output terminal disconnected from battery.

1. Ensure battery is fully charged. Visually check generator belt and wiring. Turn ignition switch to ON position (engine not running). Charge indicator light should illuminate. If charge indicator light does not illuminate, go to next step. If charge indicator light illuminates, go to step 4).
2. Turn ignition off. Disconnect generator harness connector. Using a fused (5-amp) jumper wire, connect terminal "L" of generator harness connector to ground. Turn ignition on (engine not running). If charge indicator light illuminates, replace or repair generator.

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3. If charge indicator light still does not illuminate, check for open in circuit between generator terminal "L" and ignition switch. Also check charge indicator light bulb. See **WIRING DIAGRAM**.
4. Start engine and run at 1500 RPM. Charge indicator light should go off. If charge indicator light remains illuminated, turn ignition off. Disconnect generator harness connector. If charge indicator light goes out, replace or repair generator. If charge indicator light remains illuminated, check for short to ground in generator terminal "L" circuit wiring harness.

UNDERCHARGED OR OVERCHARGED BATTERY

NOTE: Ensure battery is fully charged and in good condition before performing the following steps. If battery is not at (or near) a fully charged condition, service as necessary before proceeding.

1. Turn ignition and all accessories off. Using a voltmeter, measure and record battery voltage for use in step 4). Disconnect generator harness connector. Turn ignition switch to ON position (engine not running).
2. Connect negative lead of a voltmeter to a good engine ground. Connect positive voltmeter lead to terminal "L" of generator harness connector. On models with gauges, also connect positive voltmeter lead to terminal F/I of generator harness connector. See **WIRING DIAGRAM**.
3. Battery voltage should be present at terminal "L" or F/I (gauges only). If battery voltage is not present, repair open circuit between generator connector terminal and battery. If battery voltage is present, reconnect generator harness connector and go to next step.
4. Start engine and slowly increase speed to approximately 1500 RPM. Using a voltmeter, measure voltage between battery terminals. If voltage is greater than 16 volts, or less than voltage as measured in step 1), replace or repair generator. If voltage is less than 16 volts, or greater than voltage as measured in step 1), go to next step.

CAUTION: To prevent injury and/or damage to vehicle, disconnect negative battery cable before connecting or disconnecting a series type ammeter to generator.

CAUTION: Carbon pile testing is part of this procedure. To avoid battery explosion, turn carbon pile OFF before connecting to or disconnecting from vehicle battery.

5. Disconnect negative battery cable. Install ammeter to voltmeter. Connect voltmeter to generator output (BAT) terminal. Connect negative battery cable. With load off, connect carbon pile load tester across battery terminals. Run engine at approximately 1500 RPM, turn accessories on and load battery with carbon pile load until maximum generator output is reached. Adjust carbon pile to maintain 13 volts or more. Measure amp output.
6. If amp output is within 15 amps of rated output, generator is okay. If amp output is not within 15 amps of rated output, repair or replace generator. See **GENERATOR USAGE/AMP OUTPUT RATING** table.

BENCH TESTING

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NOTE: Information not available from manufacturer at time of publication.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See **COMPUTER RELEARN PROCEDURES** article in the **GENERAL INFORMATION** section before disconnecting battery.

Removal & Installation

Disconnect negative battery cable. Remove drive belt. Remove nut retaining positive battery cable to generator BAT terminal. Disconnect generator electrical connector. Remove mounting bolts, nuts, braces and brackets. Remove other components as necessary. Remove generator. To install, reverse removal procedure.

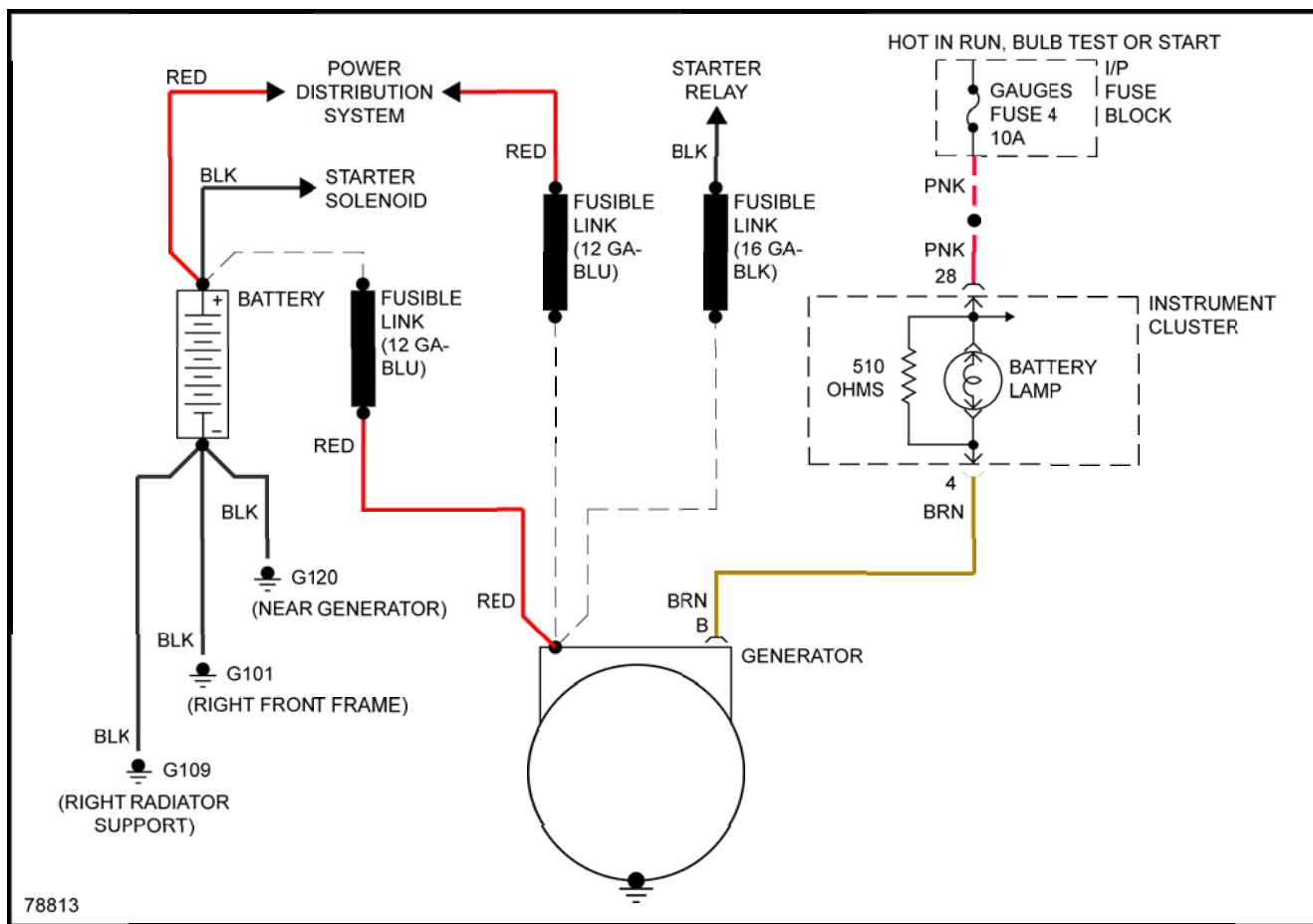
OVERHAUL

NOTE: All generators are serviced by replacement only.

WIRING DIAGRAM

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Fig. 2: Charging System Wiring Diagram